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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION



FOREIGN BROADCAST INFORMATION SERVICE

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29 March 1984

WORLDWIDE REPORT
NUCLEAR DEVELOPMENT AND PROLIFERATION

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CONVENTION ORDERS HOLD ON SEABED DUMPING OF NUCLEAR WASTES

Auckland THE NEW ZEALAND HERALD in English 1 Mar 84 p 20

[Text] London The dumping convention, which met in London and represented the views of 32 countries including New Zealand has agreed there should be no dumping of high-level radioactive waste on the world's seabeds "unless and until it is proven to be scientifically feasible and environmentally acceptable."

The convention also agreed there should be no such dumping without regulations governing disposal.

The ongoing role of the convention in discussions on the dumping of high-level radioactive wastes on the seabed was also clarified.

"We had to first discuss whether the emplacement of high-level radioactive waste on the seabed came into the scope of the convention," the secretary, Mr Sasa Mura, said yesterday.

"It is a long-term programme, not a problem of the twentieth century. There is some time to consider it and make the proper decisions.

"It was decided that the convention was the appropriate forum for discussion."

There was general agreement that such dumping would not be feasible for 15 to 20 years. This medium to long-term possibility will be discussed again at the next convention in September 1985.

At present, high-level wastes which remain lethal for hundreds of years are kept, in Britain, in bunkers at Sellafield, in Cumbria.

Eventually, when the level of radioactivity has declined significantly, the plan to convert them into vitrified blocks, but the problem still remains of where to store the blocks which would be thermally hot as well as radioactively "hot."

At the convention, a two-year moratorium on dumping low-level waste in the Atlantic, which was adopted last year, was extended by six months to allow a team of scientists to look at collated evidence on any hazards to the marine environment from such waste.

New Zealand, which was represented at the convention by the second secretary at the High Commission in London, Mr Julian Ludbrook, was concerned that such a review would be "fair, effective and expeditious."

Mr Ludbrook said New Zealand went along with the consensus view that five to 10 people should be appointed by the Atomic Energy Agency and the same number by the International Council of Scientific Unions to form the investigative body.

Experts will be drawn from a cross-section of countries.

The report is expected to be ready for perusal by convention members before their next meeting.

CSO: 5100/4362

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

NUCLEAR DELEGATION LEAVES JAPAN--Tokyo, 2 Mar (XINHUA)--China and Japan have made progress in talks on Japan providing a pressure vessel for the Chinese Qinshan nuclear plant. An 11-member delegation of the Chinese State Science and Technology Commission arrived here on February 14 for the second round of talks on peaceful use of atomic energy. It was learned China and Japan exchanged views on the implementation of the China-Japan cooperation agreement on peaceful use of atomic energy and decided to hold another round of talks in the future. The Chinese delegation left for home this afternoon. [Text] [OW021222 Beijing XINHUA in English 1200 GMT 2 Mar 84]

PRC-JAPANESE NUCLEAR POWER DEAL--Tokyo, 2 Mar (KYODO)--Japan and China have agreed on the sensitive issue of ensuring peaceful use of nuclear power technology, paving the way for Japan's first export of atomic power equipment, the Foreign Ministry said. The agreement was reached at the end Thursday of extended bilateral talks held in Tokyo in connection with Japan's plan to supply nuclear power equipment to China. [Text] [OW020205 Tokyo KYODO in English 0153 GMT 2 Mar 84]

NUCLEAR POWER AGREEMENT WITH JAPAN--Tokyo, 2 Mar (KYODO)--Japan and China have agreed on the sensitive issue of ensuring peaceful use of nuclear power technology, paving the way for Japan's first export of atomic power equipment, the Foreign Ministry said. The agreement was reached at the end Thursday of extended bi-lateral talks held in Tokyo in connection with Japan's plan to supply nuclear power equipment to China. [Text] [OW020205 Tokyo KYODO in English 0153 GMT 2 Mar 84]

CSO: 5100/4116

NUCLEAR WASTE DUMP IN PALAWAN OPPOSED

Manila BULLETIN TODAY in English 6 Mar 84 p 7

[Article by Rene Alviar]

[Text] PUERTO PRINCESA, PALAWAN, Mar. 5--The Ministry of Natural Resources expressed yesterday strong opposition to the proposal of the Ministry of Energy to dump nuclear waste materials in Palawan from the Philippine nuclear power plant nearing completion in Morong, Bataan.

Minister Theodoro Q. Pena told the Bulletin that the plan of the Ministry of Energy to dump nuclear wastes in Palawan would cause undue risk to the safety of the public as well as to the environment.

He pointed out that if there would be leakage in the facility which was designed to contain nuclear waste materials, the fishing grounds of Palawan would no longer be habitable by fish and other marine life, or that fish so contaminated would no longer be safe for eating.

He disclosed that about 500 hectares or more of land and/or fishing grounds in Palawan are being considered as dumping grounds for nuclear wastes.

Nuclear wastes, estimated to contain several thousand tons of radioactive materials, will come from the P2.2 billion Bataan nuclear power plant during its first and second year of operation.

The plant was designed to generate 620 megawatt of electric power starting January 1985. The National Power Corp., operator of the nuclear plant, will use pelletized uranium from the United States to fuel the atomic reactor which will in turn generate electricity.

During its course of operations, not all the nuclear fuel would be burned, thus producing wastes which contain radioactive material.

LONDON (AP)--Radioactive waste is still washing ashore around the Sellafield nuclear plant in northwest England, a target of strong criticism from environmentalists and government inspectors. An initial drop in the amount of contaminated materials has not been sustained, says the report by the National Radiological Protection Board (NRPB).

CSO: 5100/4361

INTER-AMERICAN AFFAIRS

BRAZIL'S GOLDEMBERG ON CLOSER NUCLEAR COOPERATION WITH ARGENTINA

Brasilia CORREIO BRAZILIENSE in Portuguese 16 Feb 84 p 9

Text Brazil and Argentina could develop closer cooperation in the nuclear area because the technological progress of both countries is complementary. In addition, the two countries should have a greater voice in negotiations for the limitation of nuclear weapons. Those ideas expressed yesterday by the important nuclear physicists, Jose Goldemberg, met with the approval of Foreign Minister Saraiva Guerreiro, according to the account of the Brazilian scientist after a meeting with the foreign minister.

A traditional critic of the nuclear agreement with Germany, and currently serving in the administration of Governor Franco Montoro (he is in charge of the Sao Paulo Electric Power Stations (CESP), physicist Jose Golemburg supports a broad program of cooperation with Argentina in view of the existing complementary status: Brazil is further advanced in the aspects of engineering, and actually builds parts for the Argentine reactors, while Argentina has already mastered the nuclear fuel cycle.

Despite the technological progress in the neighboring country, the physicist said that Brazil's concern regarding the possible capability of the Argentines to build atomic weapons is a remote one. According to estimates, Argentina will be in a position to build nuclear weapons in 5 years.

Differences

Goldemberg pointed out profound differences between the nuclear programs of Brazil and Argentina. The latter has a goal of selfsufficiency and toward that end it has been giving emphasis only to technological research and development work. He said, for example, that even in the most critical periods of Argentine political repression, the National Atomic Energy Commission (CNEA) presided over by Admiral Castro Madero, stood firm for freedom of work.

The physicist termed the fact that Argentina had succeeded in enriching uranium through the gaseous diffusion method "a significant technological

achievement." Comparing the programs of the two countries, he said that Brazil preferred to concentrate its efforts on the transfer of German technology, about which there were many doubts on the part of scientists. Beginning in 1981, the Brazilian Government saw that a good part of the scientists were right and cited what ended up being called by the press a parallel nuclear program, with emphasis on technical capability.

According to Golemborg, this parallel program does "what the cooperation agreement with Germany does not do, or what it does not do, and is believed will work." He cited as an example research for the enrichment of uranium through two different methods--ultracentrifugation and laser--which are not considered in the nuclear agreement signed with the Federal Republic of Germany.

According to the Brazilian physicist, the country will be in a position to enrich uranium 5 years from now with the reservation, if all goes well, pointing out that the pilot-plant installed in Resende is only a demonstration unit; that is, not to be used for fuel enrichment on a regular scale.

8711
CSO: 5100/2076

INTER-AMERICAN AFFAIRS

OLADE SECRETARY ON LATIN AMERICAN NUCLEAR ENERGY

PY051620 Madrid EFE in Spanish 2323 GMT 3 Mar 84

[Text] Lima, 3 Mar (EFE) -- Ulises Ramirez, executive secretary of the Latin American Energy Organization (OLADE), has stated that there is no possibility that Latin America could use its nuclear capacity to manufacture atomic bombs. The Venezuelan added that "the region does not intend to use nuclear energy for belligerent purposes, and that the nations that already have nuclear energy are using it for peaceful development purposes."

The OLADE executive secretary arrived in Lima today to participate in a meeting on Latin American low and medium-power nuclear reactors which will start on Monday. The meeting, which will continue until 9 March, is sponsored by OLADE, the Peruvian Nuclear Energy Institute, the Peruvian Energy and Mines Ministry, and the IAEA in Vienna. Ramirez added that the participants in the meeting will analyze world and regional prospects for nuclear-generated electricity, its competitiveness, the projects implemented thus far, the need for specialized personnel, the requisites to produce this kind of energy, and Latin America's uranium potential.

CSO: 5100/2077

INTER-AMERICAN AFFAIRS

BRIEFS

LA SEMINAR ON NUCLEAR REACTORS--Representatives from different countries of the continent today attended the opening of a seminar on low- and medium-power nuclear reactors for Latin America. The president of the Peruvian Nuclear Energy Institute, Juan Barrera Delgado, said that the seminar was organized in view of the international energy problems, especially in Latin America, and that it deals with the use of nonconventional energy sources. He added that the seminar will continue until Friday, 9 March, and that several experts, including some from Europe, will give lectures. [Text] [PY061720 Lima Domestic Service in Spanish 1100 GMT 6 Mar 84]

CSO: 5100/2078

BRAZIL

BUDGET INCREASE OF 100 MILLION CRUZEIROS NOT YET AUTHORIZED

Rio de Janeiro GAZETA MERCANTIL in Portuguese 16 Feb 84 p 12

/Report from Rio by Fatima Belchior/

/Text/ The Brazilian Nuclear Corporation (NUCLEBRAS) has not yet been authorized by the Planning Secretariat to increase its 1984 investment budget by 100 billion cruzeiros, a Mines and Energy Minister Cesar Cals requested Minister Delfim Neto to do a month ago. The readjustment would make feasible continuation of the Angra-II and Angra-III nuclear plant projects at the normal rate.

In a quick interview yesterday, Minister Cesar Cals said that Minister Delfim Neto "is convinced that the nuclear program needs \$850 million annually." That is, the budget appropriation approved by the Special Secretariat for State Enterprises (SEST) at the beginning of the year provided for investments in the amount of \$760 million. As he added, the addition of that portion equivalent to 100 billion cruzeiros is being analyzed by the Planning Secretariat.

There is also no determination with regard to the request by the Brazilian Electric Power Stations Corporation (ELETROBRAS) to increase its investment budget by 800 billion cruzeiros. "We presented the minister a plan capable of replacing that amount," said Cals, adding that after the analysis of this study, a justifying memorandum will be forwarded to President Figueiredo. The proposal of the Mines and Energy Ministry and ELETROBRAS is supported by "a more realistic calculation of energy rates, Cals related, without specifying any figures.

Cesar Cals said also that the proposal presented by Argentina with regard to supplying gas to Brazil in exchange for a joint project to establish a petrochemical complex on the frontier is being analyzed by the Brazilian Government. He pointed out, however, that this is a project completely independent of the purchase of Bolivian gas or even the future use of the gas from Jurua.

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CSO: 5100/2076

NUCLEBRAS, PETROFERTIL TO MINE URANIUM, PHOSPHATE IN CEARA

Sao Paulo FOLHA DE SAO PAULO in Portuguese 11 Feb 84 p 10

/Text/ Brasilia--The Brazilian Petroleum Corporation and the PETROBRAS Fertilizer Corporation (PETROFERTIL) have jointly conducted technical and economical viability studies, including the prospects of the domestic and foreign market, for exploitation of the uranium and phosphate from Itataia in Ceara. The studies should be ready the first half of this year and, based on them, Mines and Energy Minister Cesar Cals will proceed with negotiations with the French Government for the sale of uranium and phosphate in payment for financing the project.

That decision was revealed yesterday by Minister Cesar Cals to the president of NUCLEBRAS, Dario Jose Goncalves Gomes, and the vice president of PETROFERTIL, Adalberto Telles. Since state production of phosphate belongs to PETROFERTIL and that of uranium to NUCLEBRAS, the minister decided that the two companies work together, something that should occur not only in the feasibility studies but also in the establishment and operation of the project.

According to the president of NUCLEBRAS, since the phosphate appears in a much larger quantity--and also considering the technological process itself, which provides for the production of phosphoric acid first and the separation of uranium only afterwards--the Itataia undertaking should be analyzed in the first place from the perspective of phosphate production, notwithstanding the fact that it is envisaged that the payment for financing will be made with phosphoric acid and uranium. Some national companies have also expressed interest in participating in the project, and Minister Cesar Cals has already talked with the French Government to obtain financing to be paid with production.

The decision of the minister of mines and energy is that the Itataia project be directed exclusively toward export since the uranium deposits of Pocos de Saldas (Minas Gerais) and Lagoa Real (Bahia) will be sufficient to take care of domestic demand until the end of the century, according to Dario Gomes.

The vice president of PETROFERTIL, Adalberto Telles, is of the opinion that conservation of the uranium deposits would not be justified since

there is a trend toward the utilization of hydrogen for the generation of electric energy in substitution of uranium. "In addition," he said, "only the export of uranium will pay for all investments including those that are made in phosphate.

The president of NUCLEBRAS revealed that there still has not been any determination about the volume of phosphate and uranium production in Itataia. Dario Gomes reported that Minister Cesar Gals' idea is to install a pilot project in that area for the production of 50 tons of uranium and 750 tons of phosphoric acid annually. That pilot project will serve only to obtain the technical and economic parameters necessary for the establishment of an industrial-scale project which, in a second stage, could produce about 1,000 tons of uranium and 150,000 tons of phosphoric acid annually. Since the minister's idea is to process to the maximum the uranium to be exported, in subsequent stages uranium enrichment units followed by units for the manufacture of fuel elements for nuclear plants could be installed in Itataia.

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CSO: 5100/2076

BRAZIL

BRIEFS

URANIUM ENRICHMENT PRODUCTION--Rio de Janeiro, 11 Mar (AFP)--It was reported here today that in 1985 Brazil will begin producing enriched uranium at the Brazilian Nuclear Corporation complex in Rezende, Rio de Janeiro State. The report, released by the newspaper JORNAL DO COMERCIO, neither confirmed nor denied by the appropriate organizations, added that the jet nozzle [chorro centrifugo] process will be used for the enrichment of uranium. The jet nozzle process patent is shared by Brazil and the FRG. The industrial complex in Rezende is made up of a factory for fuel elements dedicated on 20 October 1982; a plant for uranium enrichment and for the conversion of uranium concentrate into uranium hexafluoride; and another factory for the manufacturing of elements necessary for the separation of isotopes. According to the press report, the production of enriched uranium through the jet nozzle process--which in its first stage will total 64 tons yearly--will be controlled by the International Atomic Energy Agency. [Text] [PY121744 Paris AFP in Spanish 2333 GMT 11 Mar 84]

URANIUM ENRICHMENT TEST--The Brazilian Nuclear Corporation (NUCLEBRAS) reported yesterday that final tests of the "first cascade" facilities for uranium enrichment utilizing the centrifugal-jet process at the Resende plant in the state of Rio will begin in the second half of this year. NUCLEBRAS explained that the "first cascade" is the first stage of the industrial plant. The demonstration plant that will effect the enrichment on an industrial scale for the production of fuel for nuclear plants will be installed subsequently. /Text/ Rio de Janeiro O GLOBO in Portuguese 18 Feb 84 p 15/ 8711

CSO: 5100/2076

GUATEMALA

NUCLEAR ENERGY USE IN AGRICULTURE, MEDICINE PROMOTED

Caracas EL NACIONAL in Spanish 13 Jan 84 p A8

[Article by Eduardo Pineda G.]

[Text] In 1983, the General Office of Nuclear Energy basically continued the program whose principal objective is to attain a physical, human and technological infrastructure that will provide efficient support for the country's economic and social development through the use and application of science and nuclear technology in the areas of health, agriculture, industry and research in general.

Accomplishments

Agriculture Sector: Work continued on the program to promote, apply and develop nuclear technology in agriculture, principally in research aimed at improving the productivity and quality of harvests through radiation-induced mutations, and the preservation of food by irradiation.

Projects: "Improving the Nutritional Quality of Beans through Gamma Radiations of Cobalt-60." The second and third generations of the Cuarentena, Suchitan, San Martin and Jutiapan varieties were harvested, and now the material obtained is undergoing biochemical tests to determine if there are any variations in the total protein content.

"Inhibition of the Outbreak of Tubercl Gemmae in Potatoes through Irradiation with Cobalt-60." The main purpose of the project is to determine what storage conditions and radiation doses are needed to prolong the storage period without the need for refrigeration.

A project was designed for the utilization of radioisotopes in agriculture, the goal being to introduce the use of nuclear technology in the study of the soil-fertilizers-water-plant ratios in order to make better use of fertilizers and improve agricultural productivity. Technical assistance has been requested from the International Atomic Energy Agency (IAEA) for this project, and the request has been granted.

Nuclear technology is being used at an experimental level to determine the density and humidity of soils for devising irrigation programs.

Health Sector: Activities in this sector have been geared toward the establishment of a Nuclear Medicine Unit that would promote the use of nuclear technology in medicine to the benefit of the country's sick. The laboratory was set up at the San Juan de Dios General Hospital, thanks to the Cooperation Agreement signed previously between the General Office of Nuclear Energy and that hospital.

The Study to Determine the Carcino-embryonic Antigen by Radioimmunoanalysis in Post-Operative Patients with Colo-rectal Carcinoma, Confirmed by Histopathological Diagnosis, has begun. The preliminary results indicate that this technique could be very beneficial for the follow-up and prognosis of the neoplastic patient, so the study will continue in order to reach conclusions on the basis of a higher number of cases.

The "Preparation and Quality Control of Radioactive Medication" Project was begun for the purpose of developing a local capacity for the preparation and control of the radioactive drugs to be used in the principal national hospitals. This will reduce the costs of the service and maintain strict quality control. Technical assistance has been requested from the IAEA, and has been granted.

Industrial Sector: Activities in this sector were oriented toward setting up a Nuclear Testing Laboratory to be used as a National Center for Applied Research in the Nuclear Sciences, and to carry out practical projects for industry, mining, archeology and teaching. This year the laboratory was equipped with assistance from the IAEA.

Work continued on the study of Contamination by Heavy Metals in the Valley of Guatemala City, using the technique of X-ray blooming. The collection of aerosol samples in the capital city has finished, and the samples are now being analyzed.

The General Office of Nuclear Energy joined the Regional Project for Latin America and the Caribbean on Non-Destructive Testing, which aims to introduce new industrial quality control techniques in the country, to standardize regulations throughout the region, and to train Guatemalan personnel in the area of non-destructive testing.

Radiological Protection Sector: The Radiological Protection Section was established in order to monitor and control the doses of radiation received by the country's technical personnel who work with equipment that gives off ionizing radiation, and to promote precision in dosimetry and radiation protection, principally in the medical, industrial and agricultural applications. Technical support is provided to the various nuclear projects that are underway in the country.

A request was put in to the IAEA to obtain technical assistance to equip the Dosimetry and Radiation Protection Laboratory which the General Office of Nuclear Energy plans to build in 1984. The request was accepted by the international agency, and the equipment needed for the laboratory will be supplied in 1984-1985, when the physical construction is completed by the Guatemalan Government.

Miscellaneous Activities

A Cooperation Agreement was signed by the General Office of Nuclear Energy and the National Institute of Seismology, Vulcanology, Meteorology and Hydrology (INSIVUMEH) to work together on the use of nuclear technology in the area of isotopic hydrology, primarily in the study of the changes in level of Lake Peten Itza. These changes have caused serious damage to the national economy and to local inhabitants. Technical assistance for the study was requested of the IAEA, and was granted.

At the invitation of the General Office of Nuclear Energy, in February 1983 the IAEA sent a Planning Mission to discuss development plans and to undertake a thorough examination of the country's nuclear needs. As a result of that mission, the IAEA approved technical assistance never before obtained in the history of nuclear energy in Guatemala. Thanks to these efforts, the IAEA will provide equipment, scholarships and expert services to carry out projects in medicine, agriculture, mining, hydrology, radiological protection and nuclear legislation.

In 1983, Guatemala joined the International Nuclear Documentation System (INIS), becoming the 70th member state of the International Atomic Energy Agency and the first Central American nation to participate in the INIS.

Guatemala was represented at the 27th Regular General Conference of the IAEA, where along with experts from that agency the various projects being carried out in Guatemala under the auspices of the IAEA were evaluated. In addition, the requests for assistance submitted by our country for consideration during the Regular Session of 1984 were also studied.

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CSO: 3248/443

ISLAMIC OFFICIAL VISITS ATOMIC ENERGY RESEARCH UNIT

Dhaka THE BANGLADESH OBSERVER in English 10 Feb 84 p 12

[Text] Dr Ali Kettani, Director General of Islamic Foundation for Science, Technology and Development (IFSTAD), visited the Atomic Energy Research Establishment (AERE) at Savar on Thursday, reports BSS.

Dr Anwar Hussain, Chairman, Bangladesh Atomic Energy Commission (BAEC) received Dr Kettani at the AERE campus and explained to him the research and development and nuclear power programmes of BAEC.

He emphasised the need for co-operation among the OIC countries in research and development works in the field of atomic energy and proposed co-operation in four areas in which BAEC is building up the infrastructure at the AERE.

The four areas are food preservation and sterilization of medical supplies by irradiation, nuclear science and technology using research reactor, electronics and solar energy.

Dr Hossain also proposed the establishment of a Nuclear Manpower Development Institute at the AERE under the auspices of the IFSTAD where research workers from other OIC countries may come for training in the field of atomic energy and allied sciences. He offered the existing facilities of the AERE including manpower for the establishment of a regional centre under the IFSTAD for research and development in atomic energy.

Dr Kettani showed keen interest to the proposals and agreed that co-operation in the field of science and technology among the OIC countries is a pre-requisite for economic advancement and self-reliance of the Muslim Ummah.

He also suggested that Bangladesh should be included as a member of the scientific council of the IFSTAD.

CSO: 5100/7059

SCOPE SEEN FOR INDO-FRENCH NUCLEAR COOPERATION

Madras THE HINDU in English 2 Feb 84 p 9

[Article by G. K. Reddy]

[Text] NEW DELHI, Feb. 1--The Indo-French agreement on nuclear cooperation which lapsed in 1980 is expected to be renewed after a high-power French delegation visits India in the next few weeks for talks to upgrade the old arrangement in a manner that is acceptable to both sides.

The idea of renewal of the earlier agreement was mooted during the recent visit of the French Minister for Industry and Research, Mr. Laurent Fabius, but a decision was deferred until the nuclear experts of the two countries had discussed the scope of this cooperation in the present-day context.

As the Atomic Energy Commission Chairman, Dr. Raja Ramanna, was away in Moscow at the time of Mr. Fabius's visit, it was suggested that his French counterpart should pay a visit to India at an early date for technical discussions. Accordingly, the head of the French nuclear establishment is expected to arrive shortly accompanied by some experts dealing with all aspects of nuclear cooperation for peaceful uses.

It was initially with French cooperation that Indian atomic scientists learnt a lot during the 1950s about reactor materials and controls, besides neutron physics, particularly in regard to natural uranium systems. The late Homi Bhabha, who had close contacts with nuclear scientists in Europe, was able to get an agreement of cooperation with the French long before other nuclear powers signed such agreements with non-nuclear States.

Heavy water plants: The French have also assisted India in setting up the heavy water plants at Baroda and Tuticorin based on the more sophisticated ammonia-hydrogen exchange process instead of the uneconomical hydrogen distillation method used at the Nangal plant. But French assistance was not subsequently available in overcoming the technical difficulties and operational problems that had arisen in running these plants.

But as the London group of suppliers started insisting on more stringent safeguards, the Indo-French agreement ran into difficulties during the 1970s, particularly after the Pokhran test. The French Government began dragging its

feet over the earlier understanding to supply high enriched uranium fuel for the fast breeder test reactor at Kalpakkam besides sharing technology for mastering the hazards of reactor stability and radiation damage in using the fast neutron spectrum.

Fresh look: After assuming the responsibility for supplying low enriched uranium fuel for the Tarapur plant, the French are now inclined to take a fresh look at this whole question of cooperation in overcoming the complexities of the fast breeder programme. But meanwhile the Indian scientists have made considerable progress in developing plutonium-based fuel for the fast breeder test reactor at Kalpakkam instead of relying on any outside source for highly enriched uranium.

The fast breeder test reactor at Kalpakkam is due to be completed and commissioned in another year and this will represent a major achievement in India's development of nuclear power for peaceful purposes. The French, who are aware of this impending breakthrough by Indian nuclear scientists, are inclined to explore the possibilities of renewed cooperation if mutually acceptable safeguards could be worked out for this purpose, since it would also open up immense prospects for participation in the supply of different categories of equipment for India's nuclear power programme.

The target: The present total installed nuclear power capacity in India is about 1,100 MWe and the plants under construction will generate another 1200 MWe. The Indian atomic programme aims at a target of 10,000 MWe by the turn of the century if the country is able to develop the fast breeder technology.

The French thus see immense scope for increased cooperation with India in the peaceful uses of nuclear energy if the two Governments could work out a new agreement. And as a dynamic and forward-looking member of President Mitterrand's Cabinet, Mr. Laurent Fabius, who has come to be widely regarded as a prototype of the new breed of Euro-statesmen, has initiated this new dialogue in mutual interest.

CSO: 5100/7058

FINAL INSPECTION OF KOEBERG BEGINS

Johannesburg THE CITIZEN in English 13 Mar 84 p 17

[Text]

CAPE TOWN.—The Minister of Mineral and Energy Affairs, Mr Danie Steyn, and officials of his Department visited the Koeberg nuclear power station yesterday.

A spokesman for Escom confirmed that the Minister, officials "and other people" were on a "site visit."

The Press liaison officer for the Atomic Energy Corporation, Mr Dries Sonnekus, said yesterday was the "programme target date" for the final inspection of the station which could take two or three days.

Any attempt to put a date on when the station would "go critical" was "very definitely absolute conjecture" at this stage, Mr Sonnekus said.

"We know criticality is around this time, but it is impossible to say what day because it depends on the final inspection. If the AEC inspectors find something they are not happy with, the licence could be withheld."

The licence would also have to be approved by the Independent Council on Nuclear Safety, a multi-disciplinary body made up of people with no ties to the nuclear industry and independent of the Government and the AEC.

The Nuclear Energy Act (1982) lays down that the council has the final say on the issue of a licence.

Mr Sonnekus said inspectors had been at Koeberg during the past few months, continually checking that all safety and security measures were being adhered to.

He said "criticality"—the operational status—would be followed by another long testing phase, during which the reactor would be kept at low power to ensure that all systems were performing to safety regulations.

Synchronisation with the Escom power grid could be expected by mid-April.

Full-power generation was expected by mid-July, Mr Sonnekus said.—Sapa.

CSO: 5100/28

KOEBERG NUCLEAR REACTOR ACHIEVES 'CRITICALITY'

Johannesburg THE CITIZEN in English 15 Mar 84 p 8

[Text]

SOUTH Africa entered the nuclear age when a nuclear reaction was initiated and controlled at a constant low level — a condition known as "Criticality" — at Koeberg yesterday.

The nuclear reaction was started at 9.25am. The Minister of Mineral and Energy Affairs, Mr Danie Steyn, announced the start in the House of Assembly.

He said the start-up at Koeberg was "the culmination of a long road of investigation, planning, construction and safety measures which will be of great importance to South Africa".

The leader of the opposition, Dr Van Zyl Slabberts, said after the announcement that the PFP welcomed the additional power that would be added to South Africa's national power grid.

"Today's event launches the era of nuclear power for South Africa," Mr Steyn said. For a country with only two indigenous sources of power, coal and uranium, this milestone was of particular importance.

"Where we exported uranium in the past, these

two sources of energy will in future be utilised in a complementary way in the best interest of the country.

"It is especially reassuring to know that as far as the safe design and operation of Koeberg is concerned, South Africa is also in the forefront and compares with the best in the world."

Here too the community could rest assured that the Atomic Energy commission and Escom were recognised internationally and that safety standards would be meticulously maintained.

South Africa was proud of its scientists and engineers who had participated in the project.

"I am convinced that with our oil-from-coal plants, the generating of electricity from coal and now the added utilisation of our extensive uranium resources for generating electricity, South Africa's energy future is assured," Mr Steyn said.

Dr Slabbert said the extra power would benefit the whole of South Africa.

"I believe it is important to keep a close watch on the potentially high cost of power to be gener-

ated by Koeberg and that any future establishment and location of nuclear plants in South Africa be very carefully evaluated," he said.

Nuclear power was a subject that generated fear and heated debate among the general public. This had to be taken into account and every precaution had to be taken to protect the public from danger and keep it as informed as possible in these matters.

The Conservative Party and the New Republic Party both congratulated the government on the initiation of Koeberg. The CP leader, Dr Adriaan Treurnicht, said it was a step of which South Africa could be proud.

Mr Aubrey Thompson (NRP, South Coast) said Koeberg signified the country's "entry into the nuclear power era" and it was fortunate South Afri-

ca had been able to learn from the expertise of the world's nuclear giants.

Reactor

Mr Thompson said he hoped the new reactor would introduce an age of cheaper energy for the country.

The Koeberg reactor will be connected to the power grid by mid-April and would commence full power generation by July, Escom announced.

Escom said the reactor would be kept at a low level while tests were being carried out. The reactor would then be increased to a higher level of activity and once Escom and the Atomic Energy Corporation were satisfied, the AEC would issue Koeberg a licence for the commercial production of power.

Escom said this would occur about mid-July.

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SOUTH AFRICA

CLAIM OF SALE OF ENRICHED URANIUM ABROAD DENIED

Johannesburg THE CITIZEN In English 29 Feb 84 p 10

[Text]

SOUTH Africa is not selling enriched uranium abroad, but is building an enrichment plant for domestic needs, according to the Atomic Energy Corporation of South Africa.

A corporation spokesman said yesterday a commercial uranium enrichment plant was under construction near Valindaba.

He was reacting to a report in the British newspaper, The Guardian, that South Africa was selling enriched uranium to "all comers."

The report claimed that this might underlie Britain's decision to reduce its stockpile of the metal by half during the next few years.

In effect, Britain would cut its present four years' supply to two years by the turn of the century, the paper said.

This change in attitude towards security of supply, with no distinction being made between civil and military provision, was announced by Mr Michael Townsend, head of the British Civil Uranium Procurement Organisation.

Initially, the change would entail ending a contract for supplies of uranium from the Roush mine in South West Africa, said The Guardian.

The AECSA spokesman said there had been confusion in The Guardian's article about the sale of natural and enriched uranium.

South Africa had been a major supplier of natural uranium for several years and, although a previous statement by the corporation said the republic was prepared to sell nuclear technology, material and equipment to those countries which wanted it, South Africa was not in a position to sell enriched uranium.

CSO: 5100/24

SOUTH AFRICA

BRIEFS

KOEBERG POWER IN MARCH--CAPE TOWN--South Africa's first nuclear power station comes on tap in the next two weeks. By April the R2 300 million Koeberg power station at Cape Town could be supplying electricity countrywide to the Escom network. The reactor will first make use of only 50 percent of its power output but a few months later it will feed its full capacity of 920mw into the national network--nearly three times more than the four turbines at the Hendrik Verwoerd Dam are able to supply. Full power generation is scheduled for about mid-July. [Text] [Johannesburg THE CITIZEN in English 29 Feb 84 p 10]

NO MOVE ON NNP TREATY--A DECISION still has to be taken whether South Africa would sign the nuclear non-proliferation treaty, the Minister of Foreign Affairs, Mr Pik Botha, said yesterday in written reply to a question by Mr John Malcomess (PPP, Port Elizabeth Central). Mr Botha said no foreign governments had made representations to South Africa about the treaty within the last year. [Text] [Johannesburg THE CITIZEN in English 2 Mar 84 p 4]

CSO: 5100/26

ZAMBIA

PMMC DIRECTOR: URANIUM EXPLORATION SHOWING MORE POSITIVE SIGNS

Lusaka DAILY MAIL in English 20 Feb 84 p 3

[Excerpt] URANIUM exploration in Zambia being conducted by three international firms is showing more positive signs.

This was said in Lusaka at the weekend by Dr Mathias Mpande the director of the newly formed Prescribed Minerals and Materials Commission (PMMC).

Dr Mpande said that the commission has received encouraging reports in the North-Western and Southern provinces.

The reports from the foreign companies indicate that apart from areas where deposits of uranium have already been discovered, Siavonga in the Southern Province and Mwinilunga and Solwezi areas in the North-Western Province have also shown a lot of uranium potential, the director said.

Agip SPA of Italy, Saarberg Interplan of West Germany and Power Nuclear Reactors Corporation of Japan are individually carrying out exploration of uranium in Zambia.

Uranium exploration by the three companies is also being done in the Luangwa district and the Copperbelt Province.

Dr Mpande stated that at the moment, the agreement is that the companies will bear all exploration expenses and the Zambian government will repay the firms 51 per cent of the costs when actual mining starts.

The first uranium prospecting in the country was inaugurated in 1979 at Namakande in the Gwembe district and in 1981 the companies were reported to have spent K8 million on prospecting operations.

And commenting on the functions of his commission, Dr Mpande said it will specifically deal in uranium exploration, prospecting, mining, processing and marketing.

He said the intention of the government was to make the commission its sole commercial arm on uranium activities in the country.

The commission, he explained, will be independent and will further monitor, regulate and research atomic issues in the country. It will begin operating with a small secretariat at the Ministry of Mines headquarters in Lusaka.

LOCAL GOVERNMENTS FEAR MAY BE FORCED TO ACCEPT NUCLEAR WASTE

Helsinki HUFVUDSTADSLADET in Swedish 2 Feb 83 p 20

[Article by Staffan Bruun: "Law Forces Municipalities to Accept Nuclear Waste?"]

[Text] A tough and bitter fight is in store when the spent nuclear fuel from Olkiluoto is to be placed in final storage. Export is practically excluded, and no Finnish municipality is likely to accept the waste voluntarily. On Tuesday Lavia was the first municipality to decide not to accept nuclear waste. But the Lavia residents cannot breathe easily. Since a decision in the matter will be made sometime in the 1990's, the name of Lavia may pop up once again--regardless of the opinion of the municipality's residents. The only remaining solution may then be to force the nuclear waste onto some municipality.

The fuel in the nuclear reactors consists of a number of uranium rods. These function for 3-5 years, after which they must be exchanged. The old rods are very radioactive and must be put in protective storage for many thousands of years.

The spent fuel rods from Lovisa are being transported to the Soviet Union. But Finland has to take care of the waste from the two reactors in Olkiluoto.

Storage will not become necessary until about 30-40 years from now. But preparations must be initiated even now, so that the decisions can be made well ahead of time, around the year 2000.

First Hole

The first test hole will be drilled in Lavia in March. According to managing director Magnus von Bonsdorff at Industrial Power, the drilling should primarily be regarded as an experiment.

"The hole in Lavia is chiefly made in order to test equipment and gain experience for the actual drilling in the bedrock."

Magnus von Bonsdorff is disappointed in the Lavia municipal council, which has already rejected final storage.

"We yield to the decision. But if no municipality wants to accept the waste, we are in a very difficult situation. Fortunately, the interim storage period is very long. There is no urgency as yet."

If Finland is completely closed, there remains only to export the waste, von Bonsdorff says.

"According to government directives we are to work on the basis of that possibility. But there are major problems here. When we previously analyzed the export possibilities, it was included in all bids that we would finally take care of the waste anyway. We would get it back well encapsulated for storage in Finland. This is why it is difficult for me to regard the export alternative as realistic."

"But we have a long time until the need for storage becomes acute. I view the future with confidence and believe that the opinion will turn around," Magnus von Bonsdorff says.

'Another Solution'

Industrial Councillor Ilkka Makipentti at the Labor Office of the Ministry of Trade and Industry says that the nuclear waste from Olkiluoto must be exported if no Finnish municipality will take it.

"Or else we must figure out another solution," Makipentti says, without specifying to what he refers.

According to Makipentti, storage will not become important until around the year 2000.

"But in order to get a head start we are already beginning to drill holes in the bedrock. We must make a decision about the final storage site before the turn of the century."

Nuclear waste generates heat. This is why one has to wait a long time before final storage, so that the temperature of the bedrock will not rise too much.

Ilkka Makipentti does not believe that final storage is dangerous in any way.

"Once the hole has been blasted and the spent fuel placed in the bedrock 1 kilometer below the surface, the site can very well be inhabited without any risk."

"Because of a lack of information people believe that this waste storage is dangerous. And people in Lavia are certainly genuinely afraid. But there is absolutely no reason for it. If all the safety regulations are observed."

He does not believe the theories that in a couple of hundred years someone would dynamite the mountain once again.

"Why would one do that? We are now looking for bedrock which is guaranteed not to contain any natural resources. There is therefore no reason to begin drilling in that place, least of all to a depth of 1 kilometer."

"Furthermore, it is obvious that the holes will be charted just like old mines."

According to Makipentti, drilling operations are to be undertaken at about 10 different sites in Finland. This is done not only with a view to future nuclear waste storage.

"At the same time we will obtain useful geological information regarding the bedrock."

However, around the turn of the century a decision must be taken regarding what to do with the spent fuel.

"If it is not sent abroad, we have to store it in Finland."

Small Rods

Today, the spent fuel is stored at Olkiluoto. According to Makipentti the fuel rods are small in volume and do not take up much room.

"There is a decision in principle today to store the spent rods as such. But the fact is that only three percent of the uranium is used during the 3-5 years the rods are inside the reactor; 95 percent remains unused."

"So far it has been considered too expensive to separate the unspent uranium from the spent in reprocessing facilities. But if the price of uranium goes up a great deal, the situation might be different about the turn of the century. By then the separation technique will also have advanced. In that case the remaining uranium will be reusable. But the highly radioactive waste will always remain and must be stored."

Actions Planned

The Nuclear Power Alternatives of the Energy Policy Association, EAK, is not planning any actions in Lavia at the start of the drilling.

"But a group of activists in the area is trying to halt the test drilling. If Industrial Power drills the hole, the risk is great that the waste will be put there, the reasoning of the Lavia group goes," says Henrik Hausen at EAK. He is of the opinion that the existing plan for storage of the nuclear waste is not a good one.

"It is based on final placement of the waste in the bedrock. We want it to be possible to open it and store it in a different way, if it turns out that this storage is not safe."

"But primarily we want an end to the production of radioactive waste, of course. That is the simplest solution," Henrik Hausen points out.

New Law

A new law on nuclear policy is being readied in the government. The major change according to the new law is that the influence of Parliament has been considerably increased for decisions on nuclear power.

The monopoly on planning and veto right of the municipalities were not curtailed. According to an official at the Ministry of Trade and Industry, an exception to the planning monopoly for nuclear power plants would be very simple to realize "purely technically," but apparently "totally impossible politically."

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CSO: 5100/2546

FINLAND

SOVIET UNION REPORTEDLY WILLING TO TAKE NUCLEAR WASTE

Helsinki HUFVUDSTADSBLADET in Swedish 9 Feb 84 p 13

[Article by MW, KK: "If Finland Orders Nuclear Power Plant: All Waste to the Soviet Union?"]

[Text] According to what HUFVUDSTADSBLADET has learned, the Soviet Union has offered to take care of nuclear waste from the Swedish-built reactors in Olkiluoto as well.

The condition is said to be that Finland orders its fifth nuclear power plant from the Soviet Union.

Deputy State Secretary Ake Wihtol says that he does not know of any such discussions. At Industrial Power people say they are interested in such a solution "if it is economically sound."

The information cannot be confirmed.

The proposal to tie the Olkiluoto waste to the order of a fifth nuclear power plant was made orally, according to what HUFVUDSTADSBLADET has learned, to the government by Soviet negotiators.

The background is that the waste question for the two Asea-Atom reactors owned by Industrial Power has not been definitely resolved. The waste from Imatran Voima's two Soviet-built reactors in Lovisa goes back to the Soviet Union, according to the purchase order.

Coupling the Olkiluoto waste issue to the order of a fifth nuclear power plant would be opportune for the Finnish government. One would avoid special laws in order to deal with recalcitrant municipalities, which do not want any final storage site within their borders.

Suspect

But Deputy State Secretary Ake Wihtol says that as far as he knows no such discussions have taken place between Prime Minister Kalevi Sorsa and Gosplan chief Nikolay Baybakov, who is visiting our country at the moment. Wihtol takes a suspicious attitude toward the information that the Soviet Union should have offered such an agreement, since he is of the opinion that a decision regarding a fifth nuclear power plant will take another 2 years.

Imatran Voima Has Heard it Said

Imatran Voima director Anders Palmgren says he has heard of the proposal to tie the two questions together.

"But I heard that from journalists. I have regarded it as a brainstorm. But the relations are such that the issue might well be discussed."

Managing director Magnus von Bonsdorff at Industrial Power states that the waste has been discussed with the Soviet Union since 1974.

"Not so that we actively pursued it, but we touched on it from time to time. If we can agree on a good contract, we are interested. The Russians have informed us that they will be very interested when the time comes. But coupling the question of a fifth nuclear power plant to our waste is something I have not heard about."

It is emphasized by von Bonsdorff that Industrial Power is not in any hurry whatsoever, and that the waste issue has been discussed with others besides the Soviet Union.

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CSO: 5100/2546

BRIEFS

IVO STUDIES FIFTH PLANT--Imatran Voima is getting down to the business of its fifth nuclear power plant. Preliminary studies of a Soviet and a French nuclear power plant are already complete. In addition, studies of a smaller Soviet plant are under way. Technical and economic solutions are being scrutinized in order to obtain alternatives, in part for the company, in part for the Ministry of Trade and Industry. "We have requested so-called budget bids. These are not bids in the actual sense but indicate the final result with a 5-10 percent accuracy," IVO director Anders Palmgren says. In April last year a 1,000-megawatt nuclear power plant cost about 7 billion Finnish marks. Yesterday it was 7 years ago since the first power plant started up in Lovisa. Together with its "twin" Lovisa 2 the plant has so far produced 30 million kilowatt hours of electricity. According to Imatran Voima, Lovisa 1 and Lovisa 2 are among the 10 best power plants of their kind in the entire world. [Text] [Helsinki HUFVUDSTADSBLADET in Swedish 9 Feb 84 p 13] 11949

SKDL WANTS SOVIET REACTOR--The People's Democratic League is forming its opinion on nuclear power by letting the organization handle it. A working group within the league has produced a draft containing two alternatives, which the members in the field must now consider. In May the league's council will then take a stand on whether the party should hold the opinion that a potential nuclear power plant should be ordered from the Soviet Union or whether there should be a complete halt to the expansion of nuclear power in Finland. According to the first alternative, the power plant must be ordered from the Soviet Union if it turns out that a power plant is really needed, and if nuclear power is still the cheapest alternative. [Text] [Helsinki HUFVUDSTADSBLADET in Swedish 13 Feb 84 p 20] 11949

CSO: 5100/2546

COOPERATION SET WITH UK OVER RADIOACTIVE WASTE DISCHARGE

UK Apology on Sellafield

Dublin IRISH INDEPENDENT in English 18 Feb 84 p 5

[Article by Nicolas Leonard]

[Text] BRITAIN yesterday apologised to the Irish Government for recent unauthorised high discharges of nuclear effluent from its Windscale plant into the Irish Sea.

Tanaiste Mr. Spring met British Minister for the Environment Mr. Patrick Jenkin in London to discuss the discharges from Windscale, now re-named Sellafield.

It has now been agreed that the two Governments will in future work closely together to improve consultation on discharges.

Britain has also agreed, temporarily, to stop all dumping of low-level waste in the Atlantic. This follows protests by British trade unions as well as by other countries.

After the meeting Mr. Spring said he was happy with the attitude of the British Government but that he would prefer to see all discharges into the Irish Sea stopped completely.

He was satisfied, however, that unauthorised discharges, such as those that took place last November, could not now happen again.

A British Government report on the incidents earlier this week, was extremely critical of management at the Windscale plant and the matter is currently being considered by the Director of Public Prosecutions.

Last year, 19 countries including Ireland, voted for a moratorium on the dumping of low level waste in the Atlantic, but six voted against and four, including Britain, said that they would continue with the practice. Britain has now changed its mind, pending a full technical assessment of the risks from the dumping.

Mr. Spring said he hoped the dumping would cease permanently, whatever the outcome of the enquiry.

He said that the Irish government was notified "within days" of the incident at Windscale last year. In future, it would expect to be notified "within hours."

Mr. Jenkin told him that he accepted the need for greater research into the long term effects of discharges on the environment and said he would inform the Irish authorities of the progress of such research.

Mr. Spring said he did not raise with Mr. Jenkin the question of the recent report by two doctors of a cluster of Down's Syndrome babies in the Dundalk area, which may be related to the Windscale discharges. The Irish Government is studying this matter.

He added that, while the scientific evidence currently available about the effects of the authorised discharging of effluent does not indicate adverse effects to the Irish people, the Government was concerned not only with the accidental discharges but also with the possible long term consequences of over 25 years of radioactive waste disposal into the Irish Sea.

Coverup Charge in Britain

Dublin IRISH INDEPENDENT in English 20 Feb 84 p 9

[Article by Alan O'Keeffe]

[Text] AN ATTEMPT was made to conceal the discharge of a large amount of radio-active nuclear waste into the Irish Sea from the British Sellafield nuclear plant last November, it has been claimed.

Police in Cumbria are preparing a file for the Director of Public Prosecutions following interviews with more than 30 employers at the plant formerly known as Windscale.

British government inspectors have reported that "inexplicable entries" were made in the plant's log of the discharges and that deletions had been made in the operation instructions.

Eight local people were examined and it was found they had traces of the radio-radio-active material ruthenium. This followed the closure to beaches when contaminated material was washed ashore after being discharged from the plant.

The government inspectors, from the Environment Department's radio-chemical inspectorate, stated that almost 5,000 curies of beta activity had been flushed out to sea during a major clean-up at the plant. Although within the permitted 15,000 curies limit for a three-month period, it breached the principle that discharges should be kept "as low as reasonably achievable."

At first, British Nuclear Fuels Ltd. estimated that only 500 curies had been discharged in the flush-out and the remaining 4,500 curies diverted to storage tanks.

The inspectors' report stated, however, that all but "a fraction" was discharged at once. The big discharge showed a significant error in operations.

The incident is being regarded as a serious blunder by the company, who have already been defending themselves against allegations of poor management. A Yorkshire Television documentary claimed that plant operations were the cause of cancer in children on the Cumbrian coast.

The large discharge was discovered by Greenpeace, the environmental pressure group, one week before the company admitted the discharge had occurred.

CSO: 5100/7517

NETHERLANDS

POLL SEES NO NEED FOR MORE NUCLEAR POWER PLANTS

Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 9 Feb 84 p 2

[Text] goe. The Hague, 8 February--There is no need for additional nuclear power plants in the Netherlands. But the two plants in Dodewaard and Borssele are to continue operating. These are the conclusions of the so-called "broad social discussion" on energy policy that began in the Netherlands in 1981 and has now concluded its work with the submission of its final report to the parliament. This discussion was organized to afford the population the greatest possible right to a say in an important matter. A total of around 42,000 persons--both private individuals and interest groups--took part in the discussion, according to estimates of the leadership panel known as the steering committee for broad social discussion, chaired by M. L. de Brauw.

The recommendations contained in the final report of the steering committee offer a survey of the options for a future energy policy and opinions on the subject held by the populace. They are intended to serve as working papers for the parliament and politicians in making decisions regarding Dutch energy sources. They will probably also keep pollsters busy for the next several years.

No one is very surprised at the result of the energy discussion. Politicians and market researchers knew full well even before the discussion started that the majority of the population believes that no more nuclear power plants should be constructed, that the waste management problem must be solved, and that environment-friendly alternative energy sources must be sought. After the final report was made public, some people wondered whether the 28 million guilders--the cost of the discussion project--could not have been spent more wisely. Although some believe that the report offers little concrete guidance for conducting an energy policy, other people think that the steering committee has nevertheless compiled numerous facts. Because its work was so thorough and comprehensive, it can no longer be said that Dutch decisions on energy policy are not based on sound deliberations.

Those who support the report claim that it can help in cost analysis as well. It has been shown, they assert, that the costs of nuclear power plants cannot be calculated decades in advance. This means that there is still a certain freedom to adapt the energy policy to the will of the people. The discussion

was very timely, they say, coming as it did at a time of falling demand for electricity. Critics of the report, however, claim that the discussion has done nothing more than delay decisions that the parliament has been too timid to make.

In addition to the views on nuclear energy mentioned above, the steering committee's report also contains the following conclusions: energy consumption must be even further reduced through slower growth and conservation measures; renewable energy sources such as wind and solar energy, which cause few environmental problems, must be introduced more rapidly; coal, oil and natural gas should be used sparingly, the latter to a lesser extent; the generation of electricity should be limited to provincial and regional plants for the most part.

On the subject of atomic energy, the final report also specifies that 14 percent of the discussion participants wholeheartedly advocate the use of nuclear energy and do not generally wish to restrict energy consumption. Thirty-four percent of the participants accept nuclear energy only with reservation and wish to allow energy consumption to climb but at a slower rate. Finally, half of the participants advocate a strong reduction of energy consumption and reject nuclear energy across the board. The steering committee itself arrives at several conclusions based on the testimony it gathered. It estimates that shutting down the two nuclear power plants now in operation would result in a loss of 1 to 4 million guilders. A shutdown would also mean the loss of technological know-how for the Netherlands. The committee holds that the consequences of a nuclear accident have been overestimated to date. Normal operation of a nuclear power plant, it claims, has hardly any effect on the environment. It holds the view that the construction of new nuclear plants in the Netherlands will not demonstrably influence the spread of atomic weapons. Conversely, the closing of the two existing nuclear plants will not reduce the danger of the proliferation of atomic weapons unless other countries would do the same.

On the problem of atomic waste, the steering committee points to the increasing confidence in IAEA, OECD and EEC circles that the problems of waste management can be solved reliably and without unbearable expense within 1 or 2 decades. The committee calls for a temporary policy of long-term storage of highly radioactive waste. The importation of electricity from nuclear plants should be rejected only for reasons of principle, states the committee. In distributing backup electricity from nuclear plants, no distinction should be made between nuclear electricity and electricity generated by other means.

The steering committee report was welcomed in principle only by the environmental citizens initiative groups. The three major political parties expressed negative reactions, each for its own reasons. The rightwing liberals, one of the two ruling parties, complain that the recommendations contain no clear statement regarding two important points: the environment and costs. The benefits of nuclear energy, they claim, were inadequately presented. The Christian Democrats agree in part with this criticism. Moreover, they believe that the conclusions of the broad social discussion have already been overtaken by actual developments. The possibility of building additional nuclear plants

should remain open, say the Christian Democrats, inasmuch as the costs of energy produced in this way are lower than the costs of alternative energy.

The Socialists in the opposition refuse to conclude from the discussion that the two existing nuclear power plants should be allowed to remain in operation. Finally, the major employers organization, the VNO [Federation of Netherlands Enterprises], does not believe that the energy discussion can be helpful in deciding a political position for the major political parties. They concur with the view of the steering committee that the Netherland's ability to compete internationally demands suitable energy prices.

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